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ABSTRACT

In order to discern the manner and determinants of instructional grouping both within and across classrooms of varying characteristics, this investigation employs a "multi level" approach. Specifically, an attempt was made to answer the following questions: How do the expenditure levels of school districts and the economic backgrounds (SES) of students within a classroom affect (1) a teacher's use of a variety of instructional formats, and (2) the cognitive complexity of tasks in group work during social studies instruction. The 219 elementary school districts in the Chicago Standard Metropolitan Statistical Area were stratified in terms of two expenditure levels and three SES levels. Twenty-three districts were randomly selected and from these eight randomly selected students in each of 55 fifth grade classrooms were systematically observed. Additional data were collected through interviews with parents, teachers, and principals. High SES of students and high per pupil expenditure by districts was associated with teachers' use of individualized math and grouped social studies instruction. In these classrooms social studies activities tended to be cognitively complex. Low SES of students and low per pupil expenditure by districts was associated with grouped math and individualized social studies instruction. Teachers in these classrooms tended to provide cognitively simple social studies activities. While comparisons of aggregated classrooms indicate patterns in grouping practices, in the absence of significance testing and further micro-level analyses, no definitive conclusions are drawn. (Author/RH)

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Variations in Grouping and Instructional Format Patterns:

Using a Multi Level Framework

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Objectives

This paper examines the manner in which students are organized, within classrooms, for instruction. This procedure, sometimes called grouping, has been examined from a number of theoretical perspectives which have largely assumed that adjusting the range of student ability, aside from other classroom factors, would have some effect on student outcome variables, usually academic

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achievement and social development. However, these research endeavors have produced conflicting evidence regarding the impact of heterogeneous or homogeneous grouping on student outcomes. This paper suggests that the examination of any instructional practice in isolation from other classroom conditions including the specific attributes of the classroom participants and the learning structure as well as their determinants will produce results which are questionable at best. The objective of the research currently in progress at the Educational Finance and Productivity Center, University of Chicago has been to develop a methodology which recognizes that learning takes place within a multi level framework. The phenomenon called grouping is being examined within this conceptual framework.

Introduction

Despite the sixty year old debate among scholars regarding its benefits and effects, grouping today, especially homogeneous ability grouping, is a well established method for organizing students for instruction. The controversy centers around the optimal conditions for teaching and learning. Proponents of ability grouping speak to the ease with which teachers can instruct and students can advance at their own rate within a narrower range of ability, whereas opposing views point to the adverse affects on self-concept, spurious¹ achievement results and the segregative effects on minority students. Yet, grouping is just one aspect of classroom life which may or may not affect student outcomes. Children face a multiplicity of experiences in their daily school life, all of which culminate in producing a variety of outcomes. Moreover, students may react to similar experiences in dissimilar ways.

One of the most important contributions of recent attempts to examine those aspects of the educational process which affect learning has been the recognition² that learning takes place within a multi level framework. While each level has an important part to play, it is the manner in which the levels interact that is significant. Individual students learn in homes and classrooms; classrooms are located (or nested) within schools, while schools are located organizationally within school districts and ecologically within attendance areas. The contribution of the multi level approach towards the objectives of this paper lies in its ability to examine a range of grouping patterns and their characteristics within and across varying structural and contextual settings. Before proceeding further with this paper, a vocabulary must be established to discern what is meant by the phrase "multi level," and the variables or dimensions which constitute each level.

1. Classroom structure. This classroom level variable is made up of a number of dimensions which reflect alternating methods for distributing human and material resources to students for learning. While the notion of a structure which frames the manner in which resources are allocated in classrooms has been alluded to by economists,³ notably Brown and Saks, it has never been attended to directly. Recent ecological studies have been more direct in their investigations and recognition of classroom structural dimensions,⁴ such as pacing, materials used, grouping arrangements, student-student interaction, instructional formats, and have attributed great importance to the manner in which differences in the patterning of these dimensions create the structure in which student and teacher behavior can be examined. But each of these dimensions are clearly a form of resource distribution, and as such, should be incorporated within the broader

conceptualization of resource allocation, and not wholly nor distinctly conceived as environmental components of instructional and learning activities.

2. Classroom context. The context within which students learn includes the collective influences of their peer group. Context is a classroom level variable and can therefore be proxied by the mean, standard deviation and skewness of the appropriate measures for students' social and economic background, ability, and motivational levels.

3. School context. This school level variable includes both formal and informal decisions made by teachers' "superiors" and peers with respect to classroom procedures.

4. Resource availability. While this is a school district and state level variable, its influence is reflected at the classroom level by the number of adults who help with instruction, and the availability of space, furniture, materials, and other purchased resources.

5. Community effects. Parents' choice of residence may be influenced by their ranking of public services and their perceptions of the quality and structure of classroom and curriculum. Conversely, curriculum and instructional procedures can reflect, over time, parental and community preferences.

Conceptual Issues

In the first year of data collection, the pilot research discovered a range of practices regarding grouping patterns in fifth grade classrooms, and that these practices are not random. Three important conceptual issues guided my investigation of these grouping patterns during the second year of data collection. The first assumed that teachers' decisions to group within fifth grade classrooms are not idiosyncratic. Rather, such decisions reflect certain realities of classroom life including (a) variation in abilities and backgrounds of the students, (b) the influence of school context variables such as the formal and informal decisions made by teachers' peers and "superiors," (c) the subject matter, and quality and scope of educational objectives, and (d) teacher training and preferences.

Second, variations in grouping practices across fifth grade classrooms are systematic and may result from resource allocative decisions made at "higher" macro levels including state and federal legislators, and local school boards and administrators. The influences of these decisions are reflected at the classroom level by the number of adults who help with instruction, the availability of space, furniture, equipment, curricular materials and other purchased resources. These "higher" level decisions constrain or provide opportunities on the decision making process of the teacher at the "lower" micro level.

In a less direct fashion, grouping patterns discerned both within and across classrooms reflect parental preferences and demands concerning educational practices and goals for children. This final issue, while more difficult to

study, assumes (a) that parents affect the knowledge, skills and affective characteristics of their children which may subsequently shape children's behavior and learning performance in the classroom, and (b) curriculum and instructional procedures can reflect, over time, community and parental demands on educators regarding the desired educational objectives for their children.

The model for this research emphasizes the importance of decisions made at the level of the classroom as well as the influence from decisions made in other spheres in an effort to discern the manner in which students are grouped for instruction and the determinants of these practices both within and across classrooms of varying characteristics. Within this general framework, this paper specifically addresses the following questions:

How does the expenditure levels of school districts and the SES background of students within a classroom affect (a) teacher's use of a variety of instructional formats including individualized programming and grouping practices during mathematics, and (b) the cognitive complexity of tasks in group work during social studies?

Methods and Data Source

This research is part of a larger research project on resource allocation and activities in the classroom which is currently being conducted by the Educational Finance and Productivity Center at the University of Chicago. The population and sampling procedures described below, therefore, pertain to the whole project as well as the research described in this paper.

The 218 elementary school districts in the Chicago Standard Metropolitan Statistical Area were stratified by two expenditure levels (upper third and lower third) and three SES levels. From this stratification process 23 districts were randomly selected in which 55 fifth grade classrooms were subsequently observed. Eight students from each classroom were randomly chosen for intensive classroom observations and parental interviews. Hence, a total of 248 students were observed and their parents interviewed. Parental interviews discerned the manner in which learning is promoted in the home and how the project student spends his/her time outside of school.

Two observers spent approximately two to three weeks in each classroom. One observer described the "activity structure," or the grouping and spatial location of students, their physical activities, materials in use, level and quality of student interaction, the teacher's location and role, and the pacing, duration and content of the lesson or activity. The second observer systematically coded the eight project students' rate of work involvement by focusing in rotation on each student for 30 seconds. Observers were present for math and social studies. The objective was to obtain data which would discern variation in classroom conditions and grouping practices in a basic skill acquisition subject (math) and a so-called enrichment subject (social studies). Toward the completion of the data collection, all students in every classroom were tested for reading comprehension and mathematics.

Teachers were interviewed regarding their practices, the physical arrangement of the classroom, preferences and the amount and level of influence they exert on curriculum and instruction decisions both within the classroom and

school-wide. Data were collected from principals concerning school facilities and personnel; district financial information was obtained from the superintendent.

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Borrowing Gump's conception of a segment,⁶ the primary task following the data collection phase was to segment the activity structures. Next, the individual observations of the eight project students in each classroom were then calibrated with the activity structure; that is, students were "placed" within the segments in which they "resided" at a particular point in time. Currently, five data files of varying levels of aggregation are being created. The files consist of (1) district level data, (2) school level data, (3) classroom level data, (4) segment level data, and (5) individual level data. This permits a multi level analysis exploring the different ways in which students are organized for instruction in a variety of conditions within classrooms and allows comparisons across classrooms in districts and communities of varying characteristics.

With regard to the specific questions addressed in this paper, student characteristics are ascertained from the classroom level data file. The principal analyses takes place within the segment file which specifies the structural characteristics of each instructional or managerial activity during math and social studies each day. Therefore, the segment is the primary unit of analysis. Those variables which pertain to the study questions stated above are examined to determine various grouping patterns, and to see if these patterns vary across classrooms residing in districts of differing expenditure levels, and attendance areas of varying SES characteristics.

Analysis and Results

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Classrooms were placed in the Cells as depicted in Figure 1 by their expenditure category, which serves as an indicator of the relative wealth of the school system, and by the socioeconomic status of the students in the classroom as determined by the mean occupational status of the head of household for each classroom student. The analysis for this paper, therefore, was performed at this level of aggregation, with results being reported for the overall characteristics of grouping in each Cell for mathematics and social studies instruction.

Figure 1

		Socioeconomic Status		
		Low	Medium	High
Per Pupil Expenditure	Low	Cell 1 N = 6 classes	Cell 2 N = 8 classes	Cell 3* N = 0
	High	Cell 4 N = 6 classes	Cell 5 N = 7 classes	Cell 6 N = 8 classes

Total: 35 classes
 18 math classes
 17 social studies classes

*No Cell 3 districts exist in the Chicago SMSA in which the sample was drawn.

The learning objectives inherent in decisions to group children for mathematics instruction are presumed to be different than those for social studies instruction. At the elementary level, mathematics, for the most part, emphasizes the acquisition of arithmetic concepts and facts. Students' group membership is usually determined by their level of mathematical knowledge with respect to other students in the class. Grouping, then, functions as one method in which teachers tailor instruction for the purpose of better meeting students' instructional needs. Individualized programming is explicitly structured to serve the learning needs of all students in a classroom at the individual level.

Grouping in social studies classes serves a much different learning objective. By its very nature the subject can lend itself to higher order tasks, even at the fifth grade level. More than just history and geography, social studies also encompasses the examination and subsequent understanding of other cultures and social and economic systems. Exercises toward this endeavor can utilize the contributions of student peer resources through discussions, debates, research and creative projects. Thus, grouping in social studies requires collective efforts in accomplishing the assigned task. These collective efforts themselves can serve as an important learning objective for the students.

Mathematics

Table 1 breaks down the instructional formats by student grouping arrangements for the entire sample. The predominate mode for instruction appears to be Whole Class Recitations and Seatwork. However, Tables 2 to 6 examine the incidence of instructional formats and grouping in each of the Cells as defined

previously in Figure 1.

If we examine the two extremes, Cell 1 (Low SES, Low Expenditure) and Cell 6 (High SES, High Expenditure), we begin to find some interesting differences. The predominate form of instruction in the low expenditure-low SES cell is Whole Class, with Recitations and Seatwork as the predominate formats. With respect to Cell 6, the figures presented in Table 6 need to be further broken down to ⁸ complete the picture. If the Individualized Seatwork segments are taken from the Whole Class and Sub-Group Private categories and reclassified into their own grouping type, we find that Whole Class formats only contribute to 29% of the instructional modes. Sub-Group Private groups make up 32% and Individualized Instruction dominates with 39%. Moreover, non-Whole Class formats tend to characterize Cell 6 math instruction overall (71%)!

Comparisons of Cell 1 and Cell 4 classrooms suggest that differences in expenditure levels, at least at this level of aggregation, demonstrate little consequence for these economically depressed populations. Whole Class Recitations and Seatwork formats tend to be the norm, as depicted in Tables 2 and 3. However, comparisons of Cell 2 and Cell 5 where SES is higher as well as relatively equal, may suggest that differences in the expenditure levels produce certain effects. In Cell 2, Whole Class activities dominated math instruction 78% of the observation period, whereas in the high expenditure Cell 5 classrooms, Whole Class grouping arrangements accounted for only 33% of math instructional tasks. In addition, of the Sub-Group Private arrangements, 56% consisted of Individualized Seatwork types of formats.

Summary of Mathematics Findings

In the absence of significance testing and further micro level analysis, I would be hard pressed to draw any definitive conclusions. However, these tables do suggest certain trends deserving of further study. The overriding issue appears to be one of SES effects versus expenditure effects with respect to differences evidenced in these mathematics segments. First of all, mathematics instruction, in this sample, consists largely of either Whole Class Recitations and Seatwork, or Individualized Programmed Seatwork. While Whole Class Recitations and Seatwork formats appeared to some extent in every classroom, Individualized Seatwork did not. Moreover, in those classrooms where there were a substantial number of Individualized Seatwork formats, there appeared increasingly fewer Whole Class Recitations and Seatwork formats.

The majority of Individualized Seatwork formats appeared in Cells 5 and 6 indicating that the high expenditure level may provide more opportunity for teachers to individualize math instruction. To the extent that expenditure level can serve as a proxy for the quantity and quality in the stocks of human and material resources available in classrooms, this is certainly plausible. However Cell 4, also a high expenditure cell, had no Individualized Seatwork formats; in fact, 73% of all math segments were Whole Class arrangements with Recitations predominating. Thus, the existence of abundant resources does not ensure this utilization nor prescribe the manner in which they are used.

Cells 5 and 6 are, unlike Cell 4, higher SES categories. This variable is far more vague in its implications and requires careful qualifications when

speculating its impact. At this stage in my research, I can only offer that there appears to be some influence on the structure of math instruction. Current research at the University of Chicago is operationalizing this variable to include time and money parents spend enriching the home learning environment for their children, as well as explicit educational demands made on teachers and school officials. Thus, research in progress is examining the proposition that parents who are willing to sacrifice time and money to enrich the home learning environment, are additionally willing to ensure a math program which suits the individual needs of their child. Moreover, parents are likely to select residences where school expenditure levels are sufficiently adequate to meet their educational demands and expectations. This suggests that there is an interaction between the phenomenon of expenditure and that of SES.

Social Studies

While the concern here is the level of cognitive complexity⁹ of tasks during group work in social studies, the incidence of group work needs first to be presented. Overall, 52% of social studies instruction during the observation period was Whole Class. The remainder of instruction took the form of some¹⁰ grouping arrangement. The following is a breakdown of Whole Class arrangements versus Group Arrangements by Cell:

	<u>Whole Class</u>	<u>Group</u>
Cell 1	76%	23%
Cell 2	81%	19%
Cell 4	51%	49%
Cell 5	49%	51%
Cell 6	34%	66%

Tables 8 through 12 present the cognitive complexity of the task within each grouping type for each of the Cells.

In Cell 1, where only 23% of social studies instruction requires any group effort, the majority of those tasks are Not Applicable regarding the order of cognitive complexity. That is, these students tend to be involved in cut and paste sorts of activities. These types of tasks also dominate in Cell 2 and Cell 4 where Group Work accounts for 19% and 49% respectively of social studies instruction.

In Cell 5, social studies instruction tips in favor of Group Work by 51%, however, in Cell 6 Group Work is clearly the preferred format by 66%. In the Cell 5 Group Work segments, only 8% of the tasks are Not Applicable regarding cognitive complexity. The majority of activities require higher order cognitive processes for their completion. This trend holds true in Cell 6 classrooms where 43% of the tasks draw upon the collective efforts of the members in each group for exercises requiring synthesis and evaluation.

Summary of Social Studies Findings

As with the results reported for mathematics, the figures presented for social studies instruction suggest some interesting trends worthy of further examinations. There is very little Group Work in Cell 1 and Cell 2. Whole Class Recitations and Seatwork tend to dominate the mode of instruction, as it did in math. However, in Cell 4, almost half the social studies segments involved some form of grouping yet none of these activities, during the observation period, appeared to be any more than arts and crafts kinds of exercises.

The story is dramatically different in Cell 5 and Cell 6 classrooms. Group Work appeared to have a specific cognitive purpose, and generally the tasks were higher order tasks. What accounts for these differences? With respect to expenditure levels, one could surmise, not quite unreasonably, that the wealth of the school district affords more and a higher quality of resources for classroom utilization. This would include teachers with certain desirable pedagogical skills as well as books and other enrichment materials. However, Cell 4 is also a high expenditure Cell, and while Group Work occurred during almost half the observation period, the quality of the tasks--that is, the level of cognitive complexity--appeared substantially less than those Group Work tasks in Cell 5 and Cell 6 classrooms. Of course, Cell 4 classes unlike Cell 5 and Cell 6 were characterized as low SES; the issue however, as with math, is what behavioral form this status description takes within classrooms. The clues, perhaps, reside in the home data which is currently being explored. The question being addressed centers around the educational values parents have regarding the type of learning offered their children in school. In particular, this research postulates that a

distinction can be made between learning objectives which teach toward the mastery of certain facts and skills essential to further learning, and those objectives which enable the application of skills and concepts in producing new learning. In this respect, parents and teachers may be willing to sacrifice the time spent on tasks which require memorizations of facts and algorithms for those activities which teach children problem solving concepts and skills.

TABLES FOR MATHEMATICS AND SOCIAL STUDIES SEGMENTS

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- Table 2. Distribution of instructional formats by grouping arrangements for mathematics in Cell 1.
- Table 3. Distribution of instructional formats by grouping arrangements for mathematics for Cell 2.
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- Table 18. Instructional formats by student grouping arrangements for social studies segments in Cell 6,

Instructional Format	Student Grouping Arrangements		
	Whole Class	Sub-Group Private	Sub-Group Inter.
Seatwork	* 53% N=61	** 44% N=55	3% N=4
Ind. Seatwk	25% N=14	** 75% N=41	—
Recitation	* 77% N=105	** 23% N=32	—
Lecture	75% N=6	25% N=2	—
Correcting Wk	75% N=21	25% N=7	—
Contest	46% N=16	—	51% N=19
TOTAL: 389	229 WC Segs 59%	137 SG-P Segs 35%	23 SG-I Segs 6%

TABLE 1. Overall distribution of instructional formats by grouping arrangements for mathematics segments.

* Of WC formats, 46% are REC and 29% are SWK.

** Of SG formats, 37% are SWK, 27% are ISW and 20% are REC.

Instructional Format	Student Grouping Arrangements		
	Whole Class	Sub-Group Private	Sub-Group Inter.
Seatwork	* 52% N=22	38% N=16	9.5% N=4
Ind. Seatwk	—	—	—
Recitation	* 72.5% N=29	25% N=10	2.5% N=1
Lecture	68% N=2	33% N=1	—
Correcting Wk	—	—	—
Contest	—	—	—
TOTAL: 85	53 WC segs 62.3%	27 SA-P segs 32%	5 SA-I segs 6%

TABLE 2. Distribution of instructional formats by grouping arrangements for mathematics in Cell 1,

* Of WC formats, 55% are Rec and 41.5% are SWK.

Instructional Format	Student Grouping Arrangements		
	Whole Class	Sub-Group Private	Sub-Group Inter.
Seatwork	* 72% N=18	28% N=7	—
Ind. Seatwk	60% N=3	40% N=2	—
Recitation	* 84% N=31	16% N=6	—
Lecture	100% N=1	—	—
Correcting Wk	* 87% N=13	13% N=2	—
Contest	69% N=11	—	31% N=5
TOTAL: 99	77 WC segs 78%	17 SG-P segs 17%	5 SG-I segs 5%

TABLE 3. Distribution of instructional formats by grouping arrangements for mathematics for Cell 2.

* of WC formats, 40% are Rec, 23% are SWK
and 17% are CWK.

Instructional Format	Student Grouping Arrangements		
	Whole Class	Sub-Group Private	Sub-Group Inter.
Seatwork	* 56% N=15	44% N=12	—
Ind. Seatwk	100% N=2	—	—
Recitation	* 100% N=22	—	—
Lecture	100% N=1	—	—
Correcting Wk	44% N=4	56% N=5	—
Contest	100% N=1	—	—
TOTAL: 62	45 WC Segs 73%	17 SG-P Segs 27%	—

TABLE 4. Distribution of instructional formats by grouping arrangements in mathematics for Cell 4.

* of WC formats, 48% are Rec and 33% are SWK.

Instructional Format	Student Grouping Arrangements		
	Whole Class	Sub-Group Private	Sub-Group Inter.
Seatwork	38% N=8	62% N=13	—
Ind. Seatwk	3% N=1	* 97% N=31	—
Recitation	63% N=17	37% N=10	—
Lecture	67% N=2	33% N=1	—
Correcting Wk	100% N=3	—	—
Contest	18% N=3	—	82% N=14
TOTAL: 103	34 WC segs 33%	55 SG-P segs 53%	14 SG-I segs 13%

TABLE 5. Distribution of instructional formats by grouping arrangements for mathematics in Cell 5,

* of SG formats, 45% are ISW.

Instructional Format	Student Grouping Arrangements		
	Whole Class	Sub-Group Private	Sub-Group Inter.
Seatwork	36% N=4	** 64% N=7	—
Ind. Seatwk	* 50% N=8	** 50% N=8	—
Recitation	* 50% N=6	** 50% N=6	—
Lecture	—	—	—
Correcting Wk	100% N=1	—	—
Contest	100% N=1	—	—
TOTAL: 41	20 WC Segs 49%	21 SG-P Segs 51%	—

TABLE 6. Distribution of instructional formats by grouping arrangements for mathematics in Cell 6.

* of WC formats, 40% are ISW and 30% are Rec.

** of SG formats, 38% are ISW, 33% are SWK and 29% are Rec.

39% of all segments are ISW.

Cell	Student Grouping Arrangements		
	Whole Class	Sub-Group Private	Sub-Group Interdepndnt
1	62% N=53	32% N=27	6% N=5
2	78% N=77	17% N=17	5% N=5
3*	-	-	-
4	73% N=45	27% N=17	-
5	33% N=34	54% N=55	13% N=13
6	49% N=20	51% N=21	-
TOTAL: 389	229 WC Segs 59%	137 SG-P Segs 35%	23 SG-I Segs 6%

TABLE 7. Percentage of grouping arrangements by cell affiliation for mathematics segments.

*There were no Cell 3 schools in the Chicago SMSA.

Grouping Arrangements	Cognitive Complexity of the Task				
	Rec. Info	Concepts/Skills	Apply/C-S	HiMntlPrc	N/A
Whole Class					
Sectioned			33 % N=4		67% N=8
SG-P					
SG-I					
Pairs					
TOTAL:					

TABLE 8. Distribution of cognitive complexity of tasks within grouping arrangements for Group Work instructional formats during social studies segments in Cell 1.

Grouping Arrangements	Cognitive Complexity of the Task				
	Rec. Info	Concepts/Skills	Apply/C-S	HiMntlPrc	N/A
Whole-Class					
Sectioned					100% N=1
SG-P					
SG-I			100% N=1		
Pairs			100% N=7		
TOTAL:					

TABLE 9. Distribution of cognitive complexity of tasks within grouping arrangements for Group Work instructional formats during social segments in Cell 2.

Grouping Arrangements	Cognitive Complexity of the Task				
	Rec. Info	Concepts/Skills	Apply/C-S	HiMntlPrc	N/A
Whole Glass					
Sectioned					N=23
SG-P					
SG-I					N=1
Pairs					
TOTAL:					

TABLE 10. Distribution of cognitive complexity of tasks within grouping arrangements for Group Work instructional formats during social studies segments in Cell 4.

Grouping Arrangements	Cognitive Complexity of the Task				
	Rec. Info	Concepts/Skills	Apply/C-S	HiMntlPrc	N/A
Whole-Class					
Sectioned			33% N=8	58% N=14	8% N=2
SG-P					
SG-I					
Pairs					
TOTAL:					

TABLE 11. Distribution of cognitive complexity of tasks within grouping arrangements for Group Work instructional formats during social studies segments in Cell 5.

Grouping Arrangements	Cognitive Complexity of the Task				
	Rec. Info	Concepts/Skills	Apply/C-S	HiMntlPrc	N/A
Whole Class					
Sectioned		8% N=3	16% N=6	65% N=24	11% N=4
SG-P					
SG-I			100% N=15		
Pairs				100% N=1	
TOTAL: 53					
		5%	22%	45%	11%

TABLE 12. Distribution of cognitive complexity of tasks within grouping arrangements for Group Work instructional formats during social studies segments in Cell 6.

Instructional Format	Student Grouping Arrangements				
	Whole Class	Sectioned	Sub-Grp P	Sub-Grp I	Pairs
Seatwork	92% N=44	—	8% N=4	—	—
Ind/Divs SWK	50% N=22	50% N=22	—	—	—
Recitation	* 100% N=83	—	—	—	—
Discussion	100% N=15	—	—	—	—
Grp Work	—	** 79% N=97	—	14% N=17	6% N=8
TOTAL: 312	164 WC Segs 52%	119 Sect Segs 38%	4 SG-P Segs 1%	17 SG-I Segs 5%	8 Pair Segs 2%

Table 13. Overall breakdown of Instructional Formats by Student Grouping Arrangements for Social Studies segments.

Overall

* of WC formats, 51% are Rec.

** of Sect formats, 81% are GrpWK.

Instructional Format	Student Grouping Arrangements				
	Whole Class	Sectioned	Sub-Grp P	Sub-Grp I	Pairs
Seatwork	100% N=13	-	-	-	-
Ind/Divs SWK	100% N=1	-	-	-	-
Recitation	100% N=23	-	-	-	-
Discussion	100% N=2	-	-	-	-
Grp Work	-	100% N=12	-	-	-
TOTAL: 51	39 we segs 76%	12 Sect Segs 23%	-	-	-

Table 14. Instructional Formats by Student Grouping Arrangements for Social Studies segments in cell 1.

Cell 1.

of we formats, 59% are Rec.

Instructional Format	Student Grouping Arrangements				
	Whole Class	Sectioned	Sub-Grp P	Sub-Grp I	Pairs
Seatwork	* 89% N=16	—	11% N=2	—	—
Ind/Divs SWK	100% N=9	—	—	—	—
Recitation	* 100% N=19	—	—	—	—
Discussion	100% N=2	—	—	—	—
Grp Work	—	11% N=1	—	11% N=1	78% N=7
TOTAL: 57	46 WC Segs 81%	1 Sect Seg 2%	2 SG-P Segs 3%	1 SG-I Seg 2%	7 Pairs Segs 12%

Table 15. Instructional Formats by Student Grouping Arrangements for Social Studies segments in Cell 2.

Cell 2:

* of WC formats, 41% are Rec and 35% are SWK.

Instructional Format	Student Grouping Arrangements				
	Whole Class	Sectioned	Sub-Grp P	Sub-Grp I	Pairs
Seatwork	70% N=7	—	20% N=2	—	10% N=1
Ind/Divs SWK	100% N=2	—	—	—	—
Recitation	* 100% N=16	—	—	—	—
Discussion	100% N=3	—	—	—	—
Grp Work	—	96% N=23	—	4% N=1	—
TOTAL: 55	28 WC Segs 51%	23 Sect Segs 42%	2 Sub-Grp P Segs 4%	1 Sub-Grp I Seg 1.5 2%	1 Pair Seg 1.5 2%

Table 16. Instructional Formats by Student Grouping Arrangements for Social Studies segments in Cell 4.

* of WC formats, 57% are Rec.

Cell 4.

Instructional Format	Student Grouping Arrangements				
	Whole Class	Sectioned	Sub-Grp P	Sub-Grp I	Pairs
Seatwork	100% N=4	—	—	—	—
Ind/Divs SWK	—	—	—	—	—
Recitation	100% N=15	—	—	—	—
Discussion	100% N=4	—	—	—	—
Grp Work	—	100% N=24	—	—	—
TOTAL: 47	23 WC Segs 49%	24 Sect Segs 51%	—	—	—

Table 17. Instructional Formats by Student Grouping Arrangements for Social Studies segments in Unit 5.

Unit 5.

Instructional Format	Student Grouping Arrangements				
	Whole Class	Sectioned	Sub-Grp P	Sub-Grp I	Pairs
Seatwork	100% N=4	—	—	—	—
Ind/Divs SWK	83% N=10	17% N=2	—	—	—
Recitation	100% N=10	—	—	—	—
Discussion	100% N=4	—	—	—	—
Grp Work	—	* 70% N=37	—	28% N=15	2% N=1
TOTAL: 83	28 WC segs 34%	39 Sect segs 47%	—	15 SG-I segs 18%	1 Pair seg. 1%

Table 18. Instructional Formats by Student Grouping Arrangements for Social Studies segments in Cell 6.

of total segments, 45% are Sectioned Group Work.

Cell 6:

Footnotes

¹ See Dominick Esposito, "Homogeneous and Heterogeneous Grouping: Principal Findings and Implications for Evaluating and Designing More Effective Educational Environments," Review of Educational Research 43, no. 2 (Spring 1973):163-179.

² J. Alan Thomas, "Resource Allocation in Classrooms," Final Report, Project No. 4-0794, National Institute of Education, U. S. Department of Health, Education, and Welfare, Chicago, Illinois, 1977. (Mimeographed.)

³ Byron W. Brown and Daniel H. Saks, "Production Technologies and Resource Allocation within Classrooms and Schools: Theory and Measurement," in The Analysis of Educational Productivity, vol. 1: Issues in Microanalysis, chap. 2, edited by Robert Dreeben and J. Alan Thomas (Cambridge, Massachusetts: Ballinger, 1980).

⁴ See for example, Paul V. Gump, "The Classroom Behavior Setting: Its Nature and Relation to Student Behavior," Final Report, Project No. 2453, Midwest Psychological Field Station, University of Kansas, Lawrence, Kansas, 1967; Rebecca Barr, "How Children are Taught to Read: Grouping and Pacing," School Review 83, no. 3 (May 1975):479-498; Joseph C. Grannis, "Task Engagement and the Consistency of Pedagogical Controls: An Ecological Study of Differently Structured Classroom Settings," Curriculum Inquiry 8, no. 1 (Spring 1978):3-36; and Susan S. Stodolsky, "Ecological Features of Fifth-Grade Math and Social Studies Classes and their Relation to Student Involvement," paper presented at the annual meeting of AERA, San Francisco, California, April 1979.

⁵ Gump, "The Classroom Behavior Setting," pp. 18-22.

⁶ Stodolsky, "Ecological Features of Fifth-Grade Classes."

⁷ The results presented below are taken from analyses of the second project year data. During the second year of data collection, three schools were selected from the City of Chicago School District. The Chicago district falls into the high expenditure range; however, one school was assigned to Cell 4 since it serves families from the lower income strata. The other two schools were originally thought to belong to Cell 6 until the data suggested that Cell 5 was the more appropriate category.

⁸ In the larger study, from which this paper is taken, students are conceptualized within Individualized Programmed Seatwork activities as their own segment. This implies, then, that a group can have a minimum of one student member.

⁹ The notion of a hierarchy of complexity regarding the cognitive expectations of a learning task is taken from Benjamin S. Bloom's, Taxonomy of Educational Objectives; The Classification of Educational Goals, Handbook 1: Cognitive Domain (New York: David McKay Company, 1956). Bloom's categories were collapsed and recoded as following:

Bloom's Categories

1. Knowledge
2. Comprehension
3. Application and analysis
4. Synthesis and evaluation

Recoded:

1. Receiving information
2. Concepts and skills
3. Applying concepts and skills
4. Higher mental processes

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The definitions for the student grouping arrangement categories are as follows:

- (a) Whole class: All students in the class are organized and involved in a collective, common activity.
- (b) Sectioned: The class is divided into groups but all the groups are doing the same task.
- (c) Sub-Group/Interdependent (SG/I): The children are in a face-to-face group and are interacting--listening to one another and/or working together. The content or objective of the task in this group is distinct from that of other groups in the class.
- (d) Sub-Group/Private (SG/P): The children are in a group but not working together and interacting. The content or objective of the task in this group is distinct from that of other groups in the class.
- (e) Pairs: Students are working in pairs on an assignment or game.